PROBLEM:

$$\begin{array}{c|c}
x[n] & \text{FIR FILTER} & y[n] \\
H(\hat{\omega}) & \end{array}$$

$$H(\omega)$$

The frequency response of the filter above is

determine a simple mathematical expression for the output signal v[n].

tabove is
$$\mathcal{H}(\hat{\omega}) = 4j \sin(\hat{\omega}) e^{-j2\hat{\omega}}$$

If the input signal is $x[n] = 3 + 5\cos(\pi n/4)$ for $-\infty < n < \infty$,